Traffic Safety Facts
Research Note

SENATE HIGHWAYS AND TRANSPORTATION
EXHIBIT NO. 4
DATE: 1/27/09
BILL NO. SB237

DOT HS 810 921

States With Primary Enforcem Lower Fatality Rates (Updated

Summary

This Research Note compares the percentage of unrestrained passenger vehicle occupant fatalities and fatality rates between States that have primary seat belt use laws and States that do not have them for the most recent years, 2005 and 2006. Besides having a smaller percentage of passenger vehicle occupant fatalities who were unrestrained, the fatality rates in primary enforcement States (PE States) were much lower than for all other States (non-PE States). The total passenger vehicle occupant fatality rate per 100 million VMT for non-PE States (1.06) is 9 percent higher than that for the PE States (0.97). The total passenger vehicle occupant fatality rate per 100,000 population for the non-PE States (11.78) is 15 percent higher than that for the PE States (10.20).

Compared with a previous study,† the difference between non-PE States and PE States during 2005 and 2006 is smaller than that between 2000 and 2004 (during 2000-2004, the fatality rate per 100 million VMT and the fatality rate per 100,000 population for non-PE States is 17 percent and 23 percent higher than that for the PE States, respectively).

Introduction

Seat belt use is the most effective countermeasure available to passenger vehicle occupants to prevent fatalities and serious injuries in highway motor vehicle traffic crashes. In order to encourage the use of seat belts, most States have enacted seat belt laws. The enacted seat belt laws vary widely, but these laws generally can be classified as primary or secondary. The primary laws permit law enforcement officers to stop a vehicle and issue a citation for a seat belt violation, even if this is the only violation the officers notice. The secondary laws allow the officers to issue seat belt citations to motorists only after they stop the drivers for other violations.

Twenty-five jurisdictions in the 50 States and the District of Columbia had primary enforcement laws in 2006. These primary jurisdictions are: Alabama, Alaska, California, Connecticut, Delaware, District of Columbia, Georgia, Hawaii, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Michigan, Mississippi, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, and Washington. The category "All Other States" in the tables below includes those that have secondary laws or have no adult seat belt use law (New Hampshire). If a State converted from a secondary to a primary law in the middle of a year within 2005 and 2006, it was included in the appropriate group except for the year that the law was upgraded, in which case it was excluded altogether. Namely, data for South Carolina in 2005, Alaska, Kentucky, and Mississippi in 2006 was excluded. This analysis also excludes fatalities to infants and toddlers, up to age 4, since most States, including secondary States, have child restraint laws that typically call for primary enforcement.

State seat belt use surveys, conducted in accordance with Section 157, Title 23, of the U.S. Code, show that the observed daytime rate of seat belt use is in general higher in PE States as compared to the non-PE States. Other studies have shown that the seat belt use rates in States that upgrade to primary seat belt laws typically increase 7 to 9 percentage points the following years, and a significant number of fatalities could be reduced if all States with secondary laws converted to primary laws.‡

The purpose of this study is to assess the advantage of primary laws by comparing the passenger vehicle (PV)

†This is an update of *States with Primary Enforcement Laws Have Lower Fatality Rates*, Cejun Liu, Tonja Lindsey, Chou-Lin Chen, & Dennis Utter. NHTSA Research Note, DOT HS 810 557, February 2006. Washington, DC: National Highway Traffic Safety Administration.

‡See NHTSA Research Note, DOT HS 810 557, February 2006, and references therein.

Traffic Safety Facts
Research Note
NHTSA
www.nhtsa.gov
DOT HS 810 921
February 2008

States With Primary Enforcement Laws Have Lower Fatality Rates (Updated)†

Summary

This Research Note compares the percentage of unrestrained passenger vehicle occupant fatalities and fatality rates between States that have primary seat belt use laws and States that do not have them for the most recent years, 2005 and 2006. Besides having a smaller percentage of passenger vehicle occupant fatalities who were unrestrained, the fatality rates in primary enforcement States (PE States) were much lower than for all other States (non-PE States). The total passenger vehicle occupant fatality rate per 100 million VMT for non-PE States (1.06) is 9 percent higher than that for the PE States (0.97). The total passenger vehicle occupant fatality rate per 100,000 population for the non-PE States (11.78) is 15 percent higher than that for the PE States (10.20).

Compared with a previous study,† the difference between non-PE States and PE States during 2005 and 2006 is smaller than that between 2000 and 2004 (during 2000-2004, the fatality rate per 100 million VMT and the fatality rate per 100,000 population for non-PE States is 17 percent and 23 percent higher than that for the PE States, respectively).

Introduction

Seat belt use is the most effective countermeasure available to passenger vehicle occupants to prevent fatalities and serious injuries in highway motor vehicle traffic crashes. In order to encourage the use of seat belts, most States have enacted seat belt laws. The enacted seat belt laws vary widely, but these laws generally can be classified as primary or secondary. The primary laws permit law enforcement officers to stop a vehicle and issue a citation for a seat belt violation, even if this is the only violation the officers notice. The secondary laws allow the officers to issue seat belt citations to motorists only after they stop the drivers for other violations.

Twenty-five jurisdictions in the 50 States and the District of Columbia had primary enforcement laws in 2006. These primary jurisdictions are: Alabama, Alaska, California, Connecticut, Delaware, District of Columbia, Georgia, Hawaii, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Michigan, Mississippi, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, and Washington. The category "All Other States" in the tables below includes those that have secondary laws or have no adult seat belt use law (New Hampshire). If a State converted from a secondary to a primary law in the middle of a year within 2005 and 2006, it was included in the appropriate group except for the year that the law was upgraded, in which case it was excluded altogether. Namely, data for South Carolina in 2005, Alaska, Kentucky, and Mississippi in 2006 was excluded. This analysis also excludes fatalities to infants and toddlers, up to age 4, since most States, including secondary States, have child restraint laws that typically call for primary enforcement.

State seat belt use surveys, conducted in accordance with Section 157, Title 23, of the U.S. Code, show that the observed daytime rate of seat belt use is in general higher in PE States as compared to the non-PE States. Other studies have shown that the seat belt use rates in States that upgrade to primary seat belt laws typically increase 7 to 9 percentage points the following years, and a significant number of fatalities could be reduced if all States with secondary laws converted to primary laws.‡

The purpose of this study is to assess the advantage of primary laws by comparing the passenger vehicle (PV)

†This is an update of *States with Primary Enforcement Laws Have Lower Fatality Rates*, Cejun Liu, Tonja Lindsey, Chou-Lin Chen, & Dennis Utter. NHTSA Research Note, DOT HS 810 557, February 2006. Washington, DC: National Highway Traffic Safety Administration.

‡See NHTSA Research Note, DOT HS 810 557, February 2006, and references therein.

restraint use of fatally injured occupants and the fatality rates with respect to two exposure measures, Vehicle Miles Traveled and population between PE States and non-PE States for the most recent years, 2005–2006.

Results

Restraint use

Table 1 shows that the percentage of passenger vehicle occupant fatalities who were unrestrained in the PE States (50%) is much lower than that in the non-PE States during 2005 and 2006 (63%). As for the differences among age groups, the unrestrained percentages between PE States and the non-PE States are: 51 versus 62 for the 5 to 15 age group; 55 versus 72 for the 16 to 20 age group; and 48 versus 61 for the 21 and older age group. It also shows the unrestrained percentage for the 16 to 20 age group is higher than that for the other two age groups in both the PE and non-PE States.

Table 1
Passenger Vehicle Occupant Fatalities by Age and Restraint Use in States With Primary Seat Belt Use Laws and All Other States, 2005-2006

Occupant Age	Restraint Use				
	Restrained		Unrestrained		Total
	Number	%	Number	%	
Primary Seat Belt Use Law States					
5-15	576	49	606	51	1,182
16-20	2,279	45	2,768	55	5,047
21+	13,173	52	12,371	48	25,544
Total	**16,028**	**50**	**15,745**	**50**	**31,773**
All Other States					
5-15	299	38	491	62	790
16-20	1,023	28	2,612	72	3,635
21+	7,029	39	10,994	61	18,023
Total	**8,351**	**37**	**14,097**	**63**	**22,448**

- Occupants with unknown age and unknown restraint use are not included in the table
- For the fatality counts, if the law changed in the middle of a year, that State was excluded from that year altogether in both State groups, but included in other years in appropriate group

Source: Fatality Analysis Reporting System (FARS) 2005 Final and 2006 ARF Files

Fatality Rate per 100 Million VMT

Table 2 shows the passenger vehicle occupant fatalities, total VMT, and passenger vehicle occupant fatality rate per 100 million VMT for both the PE and non-PE States during 2005 and 2006. The fatality rates are higher in the non-PE States when compared to those in the PE States. Table 2 shows the passenger vehicle occupant fatality rate for the non-PE States (1.06) is 9 percent higher than that for the PE States (0.97). Since the State level VMT estimates cannot be broken out by either vehicle type or age, the fatality rate by VMT was examined only as a whole.

Table 2
Passenger Vehicle Occupant Fatalities, Total VMT, and Passenger Vehicle Occupant Fatality Rate per 100 Million VMT in States With Primary Seat Belt Use Laws and All Other States, 2005–2006

Year	Fatalities in States †		Total VMT ‡		Fatality Rate per 100 Million VMT	
	Primary	All Other States	Primary	All Other States	Primary	All Other States
2005	17,076	13,129	1,755,321	1,184,675	0.97	1.11
2006	17,475	11,032	1,815,517	1,104,392	0.96	1.00
Total	**34,551**	**24,161**	**3,570,838**	**2,289,067**	**0.97**	**1.06**

- Fatalities include all occupants 5 and older, regardless of the restraint use (used, not used, and unknown).
- For the fatality counts and VMT, if the law changed in the middle of a year, that State was excluded from that year altogether in both State groups, but included in other years in the appropriate group.

Source: † Fatality Analysis Reporting System 2005 Final and 2006 ARF Files
‡ Federal Highway Administration

Fatality Rate per 100,000 Population

Table 3 shows the passenger vehicle occupant fatality rate per 100,000 population by age group in the PE States and the non-PE States during 2005 and 2006. The overall fatality rates are higher in the non-PE States, as compared to those in the PE States in every age group: 2.34 versus 2.72 for the 5 to 15 age group; 21.27 versus 25.76 for the 16 to 20 age group; and 10.78 versus 12.26 for the 21 and older age group. In both the PE and non-PE States, the fatality rate for the 16 to 20 age group is more than nine times the rate for the 5 to 15 age group and two times the rate for the 21 and older age group. Thus, both the population-based fatality rate shown in Table 3 and the VMT-based fatality rate shown in Table 2 clearly show the same pattern of lower fatality rates for States having primary seat belt use laws.

Table 3
Passenger Vehicle Occupant Fatalities, Population, and Passenger Vehicle Occupant Fatality Rate per 100,000 Population by Age in States With Primary Seat Belt Use Laws and All Other States, 2005-2006

Occupant Age	Year	Fatalities in States †		Population in States ‡		Fatality Rate per 100,000 Population	
		Primary	All Other States	Primary	All Other States	Primary	All Other States
5-15	2005	672	474	27,649,561	16,547,971	2.43	2.86
	2006	637	394	28,172,404	15,316,554	2.26	2.57
	Total	**1,309**	**868**	**55,821,965**	**31,864,525**	**2.34**	**2.72**
16-20	2005	2,721	2,085	12,731,185	7,825,832	21.37	26.64
	2006	2,807	1,832	13,261,571	7,379,113	21.17	24.83
	Total	**5,528**	**3,917**	**25,992,756**	**15,204,945**	**21.27**	**25.76**
21+	2005	13,683	10,570	126,227,941	81,242,928	10.84	13.01
	2006	14,031	8,806	130,811,174	76,788,344	10.73	11.47
	Total	**27,714**	**19,376**	**257,039,115**	**158,031,272**	**10.78**	**12.26**
Total		**34,551**	**24,161**	**338,853,836**	**205,100,742**	**10.20**	**11.78**

- Fatalities include all occupants 5 and older, regardless of the restraint use (used, not used, and unknown).
- For the fatality counts and population, if the law changed in the middle of a year, that State was excluded from that year altogether in both State groups, but included in other years in appropriate group.

Source: † Fatality Analysis Reporting System 2005 Final and 2006 ARF Files
‡ U.S. Bureau of Census

Fatality Rate per 100,000 Population by State in 2006

Table 4 shows the detailed information of passenger vehicle occupant fatality rate per 100,000 population by age group and State in 2006. States with primary seat belt use laws at the end of 2006 are highlighted in the table. Alaska, Kentucky, and Mississippi upgraded to primary enforcement in the middle of 2006, and were excluded in the analysis in Tables 1 to 3 for the year 2006. Total fatality rates are higher in the non-PE States, compared to those in the PE States in every age group.

Conclusions

Seat belt use can reduce fatalities and injuries in highway traffic crashes. Increased use of seat belts would save more lives when motor vehicle crashes inevitably occur. In this study, data shows that the percentage of passenger vehicle occupant fatalities that were unrestrained in the PE States is much lower than that in the non-PE States, 50 percent versus 63 percent during 2005 and 2006. The total passenger vehicle occupant fatality rate per 100 million VMT for non-PE States (1.06) is 9 percent higher than that for the PE States (0.97). The total passenger vehicle occupant fatality rate per 100,000 population for the non-PE States (11.78) is 15 percent higher than that for the PE States (10.20). Studies demonstrate that the crash fatalities could be prevented if the non-PE States (those with secondary laws and with no adult seat belt use laws) were upgraded to States with primary laws. Converting these States to primary enforcement laws is a straightforward way to save a significant number of lives in highway motor vehicle traffic crashes in the United States.

U.S. Department of Transportation
National Highway Traffic Safety Administration

Table 4
Passenger Vehicle Occupant Fatality Rate per 100,000 Population by Age in States in 2006

	Fatalities				Population				Fatality Rate per 100,000 Pop			
State	5-15	16-20	21+	Total ‡	5-15	16-20	21+	Total	5-15	16-20	21+	Total
AL	44	153	763	960	682,080	323,014	3,294,559	4,299,653	6.45	47.37	23.16	22.33
AK	5	5	35	45	109,136	51,114	460,032	620,282	4.58	9.78	7.61	7.25
AZ	47	141	647	835	970,352	417,425	4,298,050	5,685,827	4.84	33.78	15.05	14.69
AR	17	90	388	495	417,425	193,125	2,007,431	2,617,981	4.07	46.60	19.33	18.91
CA	95	460	2,150	2,705	5,766,967	2,696,067	25,316,496	33,779,530	1.65	17.06	8.49	8.01
CO	18	66	278	362	697,303	315,873	3,399,132	4,412,308	2.58	20.89	8.18	8.20
CT	2	41	157	200	513,915	246,341	2,541,722	3,301,978	0.39	16.64	6.18	6.06
DE	1	16	84	101	123,047	60,851	612,886	796,784	0.81	26.29	13.71	12.68
DC	0	5	13	18	67,186	43,020	436,376	546,582	0.00	11.62	2.98	3.29
FL	62	301	1,646	2,009	2,417,822	1,137,350	13,411,867	16,967,039	2.56	26.47	12.27	11.84
GA	33	183	1,066	1,282	1,473,667	665,721	6,522,419	8,661,807	3.73	27.49	16.34	14.80
HI	5	16	73	94	176,826	83,536	937,815	1,198,177	2.83	19.15	7.78	7.85
ID	9	35	165	209	235,522	107,401	1,010,579	1,353,502	3.82	32.59	16.33	15.44
IL	32	164	707	903	1,956,839	922,570	9,064,956	11,944,365	1.64	17.78	7.80	7.56
IN	20	118	509	647	962,295	448,724	4,471,412	5,882,431	2.08	26.30	11.38	11.00
IA	8	52	262	322	432,046	222,459	2,135,525	2,790,030	1.85	23.38	12.27	11.54
KS	12	53	281	346	419,688	206,249	1,944,038	2,569,975	2.86	25.70	14.45	13.46
KY	19	97	577	693	606,711	276,460	3,047,152	3,930,323	3.13	35.09	18.94	17.63
LA	26	109	601	736	659,867	323,373	3,003,153	3,986,393	3.94	33.71	20.01	18.46
ME	6	28	106	140	172,972	88,636	989,721	1,251,329	3.47	31.59	10.71	11.19
MD	7	74	368	449	827,204	399,112	4,021,212	5,247,528	0.85	18.54	9.15	8.56
MA	5	53	237	295	885,902	453,079	4,710,349	6,049,330	0.56	11.70	5.03	4.88
MI	27	98	635	760	1,535,515	734,067	7,187,866	9,457,448	1.76	13.35	8.83	8.04
MN	9	66	282	357	759,854	371,502	3,690,495	4,821,851	1.18	17.77	7.64	7.40
MS	30	101	620	751	460,446	220,817	2,019,820	2,701,083	6.52	45.74	30.70	27.80
MO	37	172	660	869	859,379	408,546	4,188,036	5,455,961	4.31	42.10	15.76	15.93
MT	5	28	177	210	131,930	66,647	688,139	886,716	3.79	42.01	25.72	23.68
NE	19	43	160	222	265,137	131,743	1,243,786	1,640,666	7.17	32.64	12.86	13.53
NV	16	34	251	301	381,685	149,425	1,780,831	2,311,941	4.19	22.75	14.09	13.02
NH	1	14	83	98	185,384	92,477	963,459	1,241,320	0.54	15.14	8.61	7.89
NJ	9	58	300	367	1,281,848	577,634	6,306,084	8,165,566	0.70	10.04	4.76	4.49
NM	20	44	268	332	306,999	146,921	1,358,710	1,812,630	6.51	29.95	19.72	18.32
NY	18	153	668	839	2,748,646	1,398,151	13,938,918	18,085,715	0.65	10.94	4.79	4.64
NC	47	167	949	1,163	1,298,619	608,877	6,337,899	8,245,395	3.62	27.43	14.97	14.10
ND	7	18	64	89	87,292	53,394	455,625	596,311	8.02	33.71	14.05	14.93
OH	29	142	732	903	1,701,967	804,629	8,236,675	10,743,271	1.70	17.65	8.89	8.41
OK	27	90	466	583	536,133	253,080	2,535,281	3,324,494	5.04	35.56	18.38	17.54
OR	14	56	274	344	522,131	242,546	2,705,421	3,470,098	2.68	23.09	10.13	9.91
PA	26	167	885	1,078	1,723,277	900,333	9,092,324	11,715,934	1.51	18.55	9.73	9.20
RI	2	8	37	47	146,122	85,031	774,496	1,005,649	1.37	9.41	4.78	4.67
SC	21	108	623	752	630,017	313,095	3,094,656	4,037,768	3.33	34.49	20.13	18.62
SD	5	24	118	147	116,244	58,764	552,083	727,091	4.30	40.84	21.37	20.22
TN	35	161	771	967	875,423	396,110	4,369,018	5,640,551	4.00	40.65	17.65	17.14
TX	134	393	1,979	2,506	3,861,207	1,723,025	15,998,354	21,582,586	3.47	22.81	12.37	11.61
UT	7	42	161	210	461,168	202,682	1,638,412	2,302,262	1.52	20.72	9.83	9.12
VT	2	13	57	72	82,361	47,060	461,708	591,129	2.43	27.62	12.35	12.18
VA	23	132	594	749	1,087,333	529,843	5,516,743	7,133,919	2.12	24.91	10.77	10.50
WA	12	88	345	445	933,927	433,277	4,620,436	5,987,640	1.28	20.31	7.47	7.43
WV	8	45	244	297	236,659	118,551	1,358,296	1,713,506	3.38	37.96	17.96	17.33
WI	13	97	428	538	800,594	402,154	4,004,994	5,207,742	1.62	24.12	10.69	10.33
WY	9	20	125	154	73,182	37,194	371,075	481,451	12.30	53.77	33.69	31.99
National	**1,085**	**4,842**	**24,069**	**29,996**	**44,665,251**	**21,189,075**	**213,126,522**	**278,980,848**	**2.43**	**22.85**	**11.29**	**10.75**
Primary	**637**	**2,807**	**14,031**	**17,475**	**28,172,404**	**13,261,571**	**130,811,174**	**172,245,149**	**2.26**	**21.17**	**10.73**	**10.15**
Others	**394**	**1,832**	**8,806**	**11,032**	**15,316,554**	**7,379,113**	**76,788,344**	**99,484,011**	**2.57**	**24.83**	**11.47**	**11.09**
PR	**6**	**33**	**183**	**222**	**648,165**	**293,957**	**2,734,050**	**3,676,172**	**0.93**	**11.23**	**6.69**	**6.04**

- States with primary seat belt use laws at the end of 2006 are highlighted in the table. Upgraded States in the middle of 2006 are shown here as primary state although it were excluded from calculation altogether in the year 2006.
- Fatalities include all occupants 5 and older, regardless of the restraint use (used, not used, and unknown).

Source: Fatality Analysis Reporting System, 2006 ARF Files, and U. S. Bureau of Census